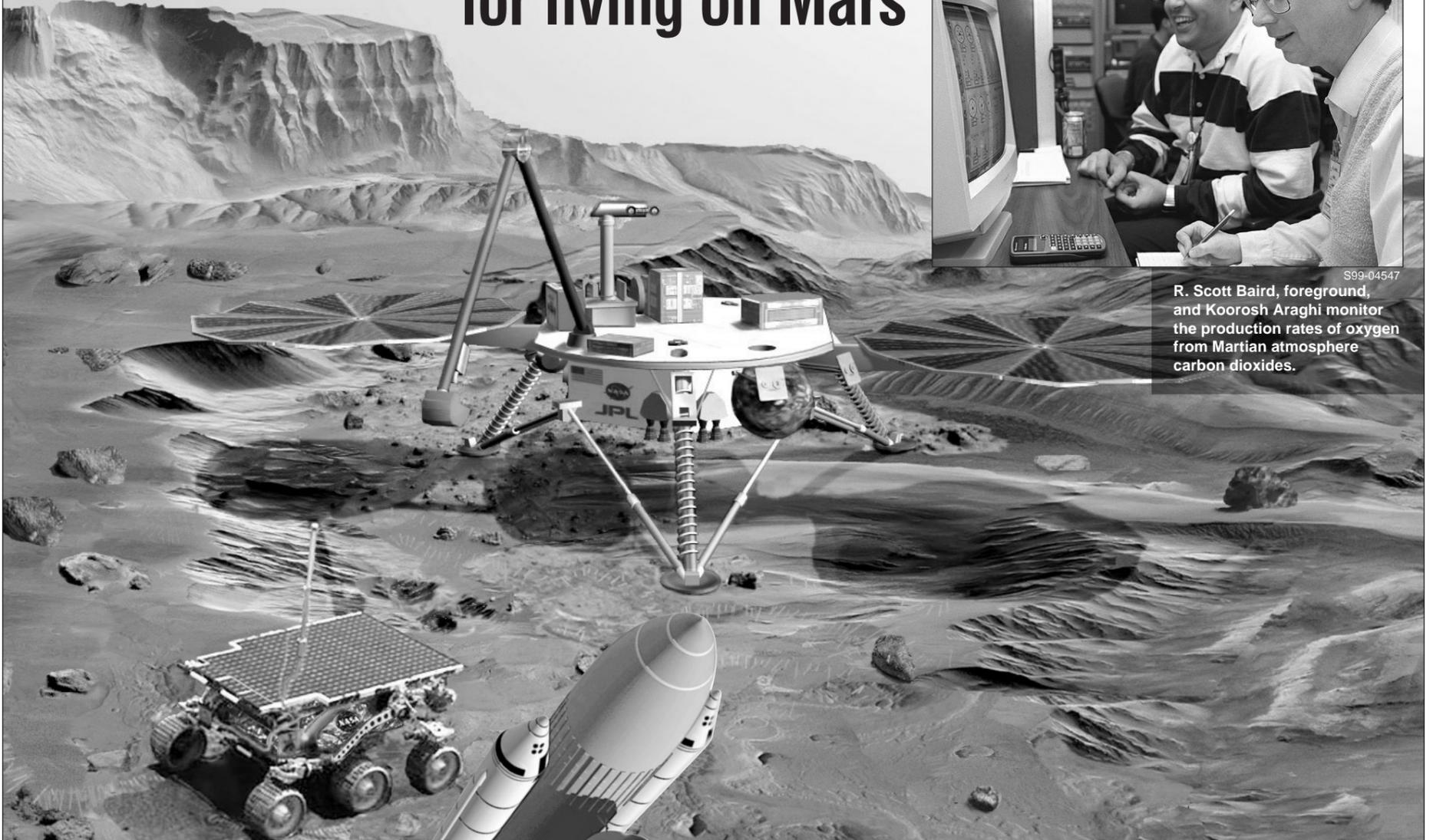


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SPACE CENTER Roundup

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NASA experiment lays groundwork for living on Mars



S99-04547
R. Scott Baird, foreground, and Koorosh Araghi monitor the production rates of oxygen from Martian atmosphere carbon dioxides.

By Kelly Humphries

NASA ENGINEERS have succeeded in a realm often left to alchemists and magicians—creating something valuable “out of thin air.” In this case, the thin air was a simulated Martian atmosphere, and the valuable commodity was oxygen.

“The concept is to use the resources on Mars to reduce the amount of material that needs to accompany a human mission,” said Principal Investigator David Kaplan of the Exploration Office at JSC. “Producing oxygen using materials readily available on Mars would be an important step toward reducing the costs and risks of an eventual human mission to Mars.”

Last month’s demonstration was an initial test of technology that will be aboard the Mars Surveyor 2001 Lander, scheduled to launch April 10, 2001, and

land on Mars on January 22, 2002. Called the Mars In-situ propellant production Precursor (MIP), the experiment tested the feasibility of using the thin Martian atmosphere to produce oxygen for breathing air and propellants. Propellants created on Mars could eventually be used to send samples and astronauts back to Earth.

“The MIP team of scientists, design engineers, and test engineers have worked very hard for nearly two years to create the prototype unit used for this test,” said Project Manager Jim Ratliff. “We are all very excited about the opportunity to build the first hardware that will produce a resource on another planet. Now that these test have proven our concept works, we

will finalize the design and begin development of the flight article that will operate on the Mars surface.”

The primary test involved an experimental device inside a Mars environment chamber operated by JSC’s Energy Systems Test Branch that selectively absorbed carbon dioxide from a simulated Martian atmosphere called “Mars mix” and converted it to oxygen. This technology also may be used to extract pure oxygen from Earth air for home, medical and military needs.

The atmosphere inside the experiment chamber simulated Martian temperatures and atmospheric pressures. The “Mars mix” was 95 percent carbon dioxide, thin (almost 150 times thinner than Earth’s atmosphere) and cold (–125 degrees Fahrenheit, like a typical Martian night).

The mix provided the raw materials for the chemical reaction. A wafer-thin, solid-oxide ceramic disk made of zirconia, a little larger than the size of a quarter (1.25 inches in diameter), was sandwiched between two platinum electrodes and heated to 1,380

degrees Fahrenheit. When carbon dioxide is fed to this unit, the zirconia cell “cracks” the carbon dioxide into carbon monoxide and oxygen. Only the oxygen can penetrate through to the other side of the disk; the carbon dioxide and carbon monoxide gases are stopped in their tracks.

The MIP payload will perform five experiments on Mars. It will selectively absorb and compress carbon dioxide from the Martian atmosphere; produce propellant-grade, pure oxygen; test advanced photovoltaic solar cells for energy production; test techniques to combat the settling of airborne dust onto solar arrays; and test thermal radiators. Designers and developers of these five experiments come from JSC, the Glenn Research Center, the Jet Propulsion Laboratory and the University of Arizona. ■

For more information about the Mars Surveyor 2001 mission, visit <http://mars.jpl.nasa.gov/2001/>



Armstrong opens last season in the Dome. Page 3



Spacesuits used for historic test at JSC. Page 4



Students take science to new heights. Page 5

New Physiological Training Chamber opens at Sonny Carter Training Facility



S99-03597

Shown is a view of the new Physiological Training Chamber housed in the Sonny Carter Training Facility.

IT HAS BEEN used to train all astronauts since the Gemini days, including those who flew during the Apollo Soyuz mission era and aboard the Skylab. Until recently, all space shuttle astronauts trained in it. Astronaut John Glenn has gone through it, as have actors Tom Hanks, Kevin Bacon, Gary Sinise and Bill Paxton. Before it arrived at JSC, World War II cadet pilots trained in it.

University and high school students selected for NASA's Reduced Gravity Student Flight Opportunities Program go through it every year.

It's called the Physiological Training Chamber. Some people know it as the "altitude chamber." It is used to demonstrate the effects of reduced pressure, specifically hypoxia and gas expansion.

Astronauts, staff pilots, and aircrew members who fly aboard NASA aircraft or spacecraft must undergo physiological training before their initial flights and every three years thereafter. Since 1965, they have been trained in the WWII vintage hypobaric training chamber housed in Bldg. 32 at JSC.

After 34 years of service, the old chamber was recently retired. Physiological training is now being conducted in a new chamber in the Sonny Carter Training Facility.

The new chamber was purchased for a fraction of its worth.

Gordon Baty, special projects officer and senior physiological training instructor, knew that military bases across the country were being closed and that their physiological chambers could be reasonably purchased as excess equipment. In March 1993, paying only the \$4,000 price of transportation, NASA purchased a chamber that had been in use at a military base in South Dakota.

The chamber remained in storage until January 1997. It was in bad shape after the trip from South Dakota. It was sandblasted, repainted and put into place at the SCTF.

A contract was reached with the Air Force Logistics Center to rehab it last August.

The first run with 16 students was conducted in the new chamber on March 2. At that time, all of the physiological training instructors were officially relocated from JSC to the SCTF.

"NASA spent about three hundred thousand dollars for a chamber that is worth about two million dollars," said Baty. "We now have a state-of-the-art chamber that has replaced a 1943 Army Air Corps chamber."

The old facility has not seen its final days. It is going to be turned into a research chamber for life sciences.



S99-03598

Dave Carrway, aerospace physiology specialist with the Manned Test Support Group, fits life support equipment on a student.

The Physiological Training Chamber is the only one of its kind that NASA operates. Instructors are responsible for training students from all NASA centers.

Others are also trained in the facility. Test subjects, test conductors and rescue technicians who participate in chamber activities and duties aboard the KC-135 receive training. Also, for the past 30 years, NASA has had an interagency agreement with the Federal Aviation Administration to provide one training class per month for civilian pilots in the Houston area at no charge. Since its inception, about 10,000 pilots have been trained. Civilian pilots will continue to be trained in the new chamber. ■

NASA, Boeing station team receives Space Achievement Award

NASA and Boeing have received two prestigious aerospace awards in the last few weeks: The National Space Club's Nelson P. Jackson Award and the United States Space Foundation Space Achievement Award. Both awards were accepted on behalf of the NASA and Boeing International Space Station teams by Randy Brinkley, departing head of the ISS Program for NASA, and Doug Stone, Boeing's vice president and general manager.

Pictured here, Brinkley, left, and Stone accept the Space Achievement Award in Colorado Springs on April 5 at the 15th National Space Symposium.

"We certainly have faced many challenges along the way and I'm proud to say that we've been able to overcome them all. It hasn't always been pretty and it hasn't been as soon as we would like to have done it, but if you look up in the heavens, you'll see a new star on the horizon. It's the International Space Station," Brinkley said in accepting the award.

"It's a privilege and an honor to represent the thousands of women and men all over the world who have spent, in some cases, all of their career making your space station a reality," Stone said.

The United States Space Foundation Space Achievement Award is presented annually to an individual, team or organization for lifetime achievement or a landmark technical accomplishment. ■



Photo courtesy of Boeing

C O M M U N I T Y N E W S

S99-04527

Cindy McArthur, left, coordinator of the JSC Educator Resource Center at Space Center Houston, gives some educational materials to Lisa Jackson, seventh grade teacher at Christa McAuliffe Middle School in Missouri City as some students look on.



S99-04531

Educator Resource Center Coordinator Cindy McArthur, right, reviews some classroom materials with Christine Burgoon, third grade teacher at Westchester Elementary School in Baltimore.

Educator Resource Center attendance increases 300 percent during first year

THE JSC EDUCATOR RESOURCE CENTER at Space Center Houston served more than 5,000 educators during calendar 1998, its first full year of operation.

The Educator Resource Center is operated by Space Center Houston and JSC in partnership. Educators from around the world receive personalized instruction using information based on NASA's unique mission.

"We're really happy with the large number of teachers we're able to serve with the ERC," said Billie Deason, education lead at JSC's Office of Public Affairs. "The facilities and expertise of NASA and Space Center Houston make the ERC a unique resource for educators."

JSC and SCH combined their unique capabilities in May 1997 to establish the center. The center was moved from on-site at JSC to SCH to allow easier access for teachers. As a result, attendance increased by more than 300 percent over the previous year.

Cindy McArthur, formerly a kindergarten teacher in the Clear Creek Independent School District, joined SCH last September as coordinator of the ERC.

"The ERC attracts teachers from across all of the disciplines," said McArthur. "Science and math teachers who visit us already know that they are going to use space as a theme in their classroom presentations. But to see the language arts and the music teachers who come in and leave so excited because they have discovered some application that they can use in their classrooms makes the experience all the more fulfilling for us."

Part of NASA's comprehensive education program, the ERC contributes to national educational goals by helping teachers expand and enhance their students' scientific and technological competence. Educators have immediate access to a wealth of information based on NASA's programs, technologies, and discoveries.

"Our school just opened this year, so I stopped by to get some educational materials," said Christine Burgoon, a third grade teacher at Westchester Elementary School in Baltimore. "The students are very interested in space and astronomy. And they have computers in their classrooms, so the Web sites listed in these materials will be very helpful."

The ERC is free to educators. It has created a range of educational programs to make science come alive through teacher workshops, video programs, Internet access, video dubbing and NASA education materials.

Available at the center are:

- ◆ **NASA education materials, including the agency's exciting activity guides.** They are available for all grade levels. The activities focus on integrating math, science, and technology into the classroom. NASA educational and informational materials are provided at no cost. The ERC also offers information on how to purchase supplemental curriculum materials for a minimal fee.
- ◆ **Internet access.** Teachers are shown how to access NASA's vast online resources.
- ◆ **Trained advisors.** Certified teachers consult with the educator on classroom needs and project ideas.
- ◆ **Educator workshops.** Experts help train teachers to get the most out of NASA's curriculum guides.
- ◆ **Lift-off to Learning video series.** In these state-of-the-art video productions, shuttle astronauts share space experiences. These videos and more can be viewed and copied for the classroom at the ERC.

In addition to the ERC being open without charge to educators, SCH's parking fee is waived for them. A total of 5,043 educators used the ERC last year.

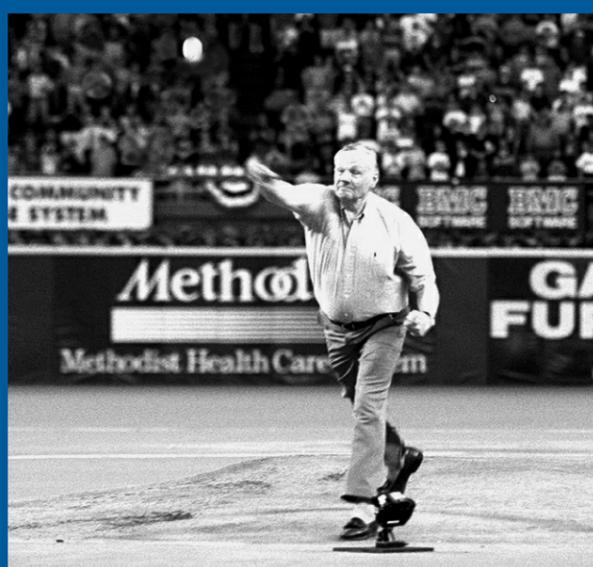
The ERC is inside SCH, through the flight deck of the shuttle mock-up. Its hours are 10 a.m. to 5 p.m. weekdays. Weekend appointments are available. For details, call 281-244-2129 or 800-972-0369, x2129. ■

Armstrong opens Astros' season with ceremonial first pitch



S99-04695

Neil Armstrong was escorted by former Astros Jimmy Wynn and Bob Aspromonte and flanked on both sides of the infield by 89 NASA astronauts. Armstrong walked to the mound and tossed the pitch to second baseman Craig Biggio.



S99-04694

Armstrong, the first man to walk on the moon, throws out the ceremonial first pitch prior to the Houston Astros' opening day game April 6, just like he did along with 23 Mercury astronauts on April 12, 1965, in the first National League game ever played at the Astrodome. This season marks the final year that the Astros will play in the Astrodome.

U.S. and Russian spacesuits used in historic test

The Russian Orlan and American Extravehicular Mobility Unit spacesuits were used together in a manned vacuum test on March 31 in the Space Station Airlock Test Article in Bldg. 7. The SSATA is a ground-based facility used to support the International Space Station Program for airlock and extravehicular activity (EVA) hardware testing, verification/certification, and crew training. The SSATA is a man-rated, high-fidelity, 1-g airlock facility that provides flight-like simulation of airlock and EVA operations in pressures ranging from vacuum to one atmosphere.

The objective of the test was to verify that the Umbilical Interface Assembly and the Power Supply Assembly, two major pieces of the Servicing and Performance Checkout Equipment (SPCE) hardware that will support spacesuits in the space station airlock, could support both suits. The UIA is a 30-inch by 30-inch umbilical panel that allows a combination of Russian or U.S. umbilicals to attach to it for supporting the suited pre-EVA, EVA, and post-EVA umbilical operations. The PSA provides conditioned suit power to each suit.

"This test marked the first time that we've ever had a Russian spacesuit in an American facility, and it's the first time that anybody has ever conducted a manned test with two different spacesuits at the same time," said Raul Blanco, NASA manned test director in the Systems Test Branch of the Crew and Thermal Systems Division. "Everything worked extremely well. Due to the successful performance of the test hardware, the facility, and the procedures, we are now ready to begin Russian or American spacesuit testing and training of space station crews on airlock operations in this chamber."

The two suits differ significantly from each other in both design and operation, making the design of the UIA and PSA more challenging. The suits were tested simultaneously to simulate the worst possible scenario—maintaining two different suits—that the UIA and the PSA aboard the station will have to support. EVAs consisting of one U.S. and one Russian spacesuit are not planned; however, the UIA and PSA hardware can support this scenario, if necessary.

Joey Marmolejo, NASA project manager for the UIA and the PSA, was the

American spacesuit test subject, while Gennady Glazov, lead suit engineer for Zvezda, the contractor that built the Russian suit, served as the Russian subject.

Marmolejo was chosen to be the EMU suit subject because of his previous EMU experience and his thorough knowledge of the UIA and PSA.

"I'm glad that all of the planning and coordination over the last three years that we've done to pull off a test like this with participation from numerous groups including the Russian space administration, Zvezda, the ISS and shuttle programs, the



Joey Marmolejo, left, and Gennady Glazov stand in the Crew Lock of the SSATA during a "dry run" for the first ever EMU-ORLAN manned vacuum test.



S99-04421

Gennady Glazov stands in front of the Crew Lock of the SSATA.

Astronaut Office, and the EVA Project Office have finally paid off," said Marmolejo. "And, of course, I'm glad that all of the hardware, both Russian and American, performed great. This test was successful because of all the hard work that a lot of people put into it."

Glazov was very pleased with the test. "I can say that since lots and lots of time was spent in preparing for the testing, the test itself went very smoothly, and we have not encountered any issues. Everything was very successful."

Glazov found no differences between Russian and American ways of testing spacesuits. "I believe that the philosophies are very similar. I would even say that they are identical. But the organizational side is a little different. You [Americans] pay a great deal of attention to documenting everything in great detail and to the safety issues. And, of course, there's nothing bad in that. It's just that it takes a little more time."

The Orlan suit was the first one ever brought back from Mir where it was used for 13 space walks. Normally after the Russians finish using their suits, they eject them and let them burn up upon reentry in the atmosphere. But an agreement was worked out whereby this particular suit was returned by a shuttle crew specifically to undergo these tests.

Upon return from space, the ORLAN-DMA suit was delivered to Zvezda's factory just outside of Moscow, where it was tested and modified to behave like an ORLAN-M (the model that will be used on the ISS). The opportunity provided the first chance ever for the suit's designers and makers to see how an Orlan spacesuit wears after that much use in space.

After post-flight test and refurbishment, which took place about one year ago, the suit was then tested at vacuum in Russia. Both Blanco and Marmolejo traveled to Russia to witness the test to learn more about the Orlan and Zvezda's methods for suit testing. Glazov served as the test subject during this test.

A few weeks ago, an unmanned checkout was conducted on the EMU in the SSATA. More recently, the EMU was used at vacuum with Marmolejo serving as the test subject. The test verified that the SSATA and the SPCE could support the American suit.

For one week, unmanned tests were then successfully performed with and on the Orlan suit to verify the facility support systems, instrumentation, and the suit systems.

The team then had confidence that the Orlan suit and the facility were ready for a manned vacuum test. Glazov served as the test subject for a manned test, which also proved successful.

But could the SSATA and the SPCE support a manned test of both suits at the same time? Could procedures for the safe operation of simultaneous suits be developed that would allow for the different pre-breathe protocols and ambient pressure profiles? The test conducted March 31 proved that all of these objectives could be achieved.

The Systems Test Branch of the Crew and Thermal Systems Division anticipates that 30 astronauts will undergo space walk and station airlock training in the SSATA during the next year. Yet to be tested are two EMUs simultaneously, a concept that might allow for savings of both money and time.

At present, the SSATA contains the UIA, the PSA and all of the necessary interfaces to support American or Russian suits. However, within the next several months, the SSATA will also contain other key pieces of airlock and EVA support hardware including a battery charger assembly, a battery stowage assembly, and an in-flight refill unit among other items necessary to support future astronaut training. ■

Russian-American Test Team



Members of the Russian-American test team take a break during preparations for the combined EMU-ORLAN Space Station Airlock Manned Vacuum Test. Shown, from left, front, are: Joey Marmolejo; middle: Raul Blanco, Aram Elbakyan, James Chatham; back: Gennady Shchavlev, James Skipper, Ivan Tchistyakov, Gennady Glazov.

High-flying students take science to the limits

By Eileen Hawley

HIGH OVER THE GULF OF MEXICO, a lone aircraft cruises at 32,000 feet. The pilot aims its nose toward the waters below, descending 10,000 feet before once again pulling out and climbing higher in the skies. On board, the passengers routinely tend to experiments and investigations, and take some time to enjoy the moment.

Enjoy the moment? Yes, because the plane is NASA 931 and the passengers are students, journalists, flight surgeons and test directors participating in this year's Reduced Gravity Student Flight Program. The program, now in its third consecutive year, is funded by NASA and administered by the Texas Space Grant Consortium (TSGC).

As the specially-modified KC-135A aircraft flies a roller-coaster-like profile over the Gulf of Mexico, these passengers are reaping the rewards of a semester spent designing, developing and preparing experiments they are now testing in the reduced gravity environment on board the KC-135A.

"This year's program was just outstanding," said Lucia Brimer, assistant project director (TSGC) for the Reduced Gravity Student Flight Program. "The caliber of students, experiments and support from JSC personnel led to a very successful program and rewarding experience for everyone involved. The students' excitement and enthusiasm for just being at NASA and getting to participate in this extraordinary program was evident every time you looked at them."

For three weeks in March, Ellington Field was home to more than 200 students and journalists representing 44 college and university teams from throughout the United States. Housed in Hangar 990, the students assembled their experiments, planned their flight strategy, and trained for their highly-coveted seats on board NASA 931.



99e02057

University of Wisconsin student experiences hypoxia in altitude chamber.



99e01819

Students conduct a final rehearsal of procedures and equipment in the days before flight. In this experiment, the headset features a built-in computer and heads-up display which may one day replace the wrist-mounted checklists used by astronauts during space walks.

To prepare for the flights, students spent one full day in classroom sessions learning how their bodies might react during the flight. Classroom time was a requirement before the students entered the "altitude chamber" to get a preview of flight operations. Under the guidance of Mike Fox, supervisor of the Manned Test Group, the prospective flyers filed into the chamber, oxygen masks in hand. Much like a simulation when astronauts train for space flight, the students experienced a series of malfunctions and challenges. At a simulated altitude of 25,000 feet, the students removed their oxygen masks and experienced hypoxia, a reduced flow of oxygen to the brain—always under the watchful eyes of Fox and his experienced crew. At the conclusion of the run, the students file out of the chamber, weary but victorious.

"The students really enjoy the chamber run and the total experience of being at JSC and flying on the KC-135," said Donn Sickorez, JSC's university affairs officer. "But this is serious business and they know that. We need them to be able to respond to directions and understand safety protocols on the aircraft to ensure their flight is both safe and successful."



99e01837

Donn Sickorez, JSC's university affairs officer, talks with students from Rose-Hulman Institute of Technology about their experiment.



99e02286

Anticipation showing on her face, one of the flyers boards the KC-135.

Back at Ellington Field, the tests and quizzes continue. Aviation safety officers, aircraft pilots, test directors and educational specialists review the experiments with the student teams. They closely inspect the experiments chosen for flight to ensure they meet all required safety criteria, checking for exposed bolts, sharp edges or flammable material. They quiz students on operation of the experiment during flight and their responsibilities as passengers on board.

During pre-flight "pilot's briefings," Reduced Gravity Test Directors John Yaniec and Judy Rickard convey expectations, rules and requirements in no uncertain terms. They take the job seriously. Passenger and aircraft safety is their primary concern.

Finally, with lectures, classrooms and test reviews behind them, it's time to fly for the students and journalists involved in the program. While flight surgeons have always been available before and after the flights, this year at the suggestion of JSC's Dr. Chuck LaPinta, they climbed on board every flight along with students and journalists. Their presence was well received.

"Dr. LaPinta ministered to our misery, dispensing hard candy to ease dry throats and mask bad taste," said reporter Diedra Henderson who accompanied University of Washington students. "The comforting squeeze he gave my shoulder was worth a million dollars."

As the KC-135 rolled down the runway for take-off, team members who weren't flying gathered in front of a conference room television set to watch their classmates make history. Live television from the KC-135 lets them see the action real-time.

Laughter and cheers erupted as they saw their friends floating about the plane, followed by groans as someone reached for that little white bag stuffed in a flight suit pocket.

Journalists representing hometowns, major networks and national newspapers documented the students' preparations and the flights, joining them on board. USA Today's Tim Friend covered students from nearby Lamar University and their experiment into the dynamics of tethered satellites. CNN's Miles O'Brien joined undergraduates from the University of Idaho as they studied the responses of composite structures in microgravity.

The KC-135's reputation as a stomach-churner is legendary, but is also part of its allure. One reporter noted a final action item as he walked toward the hangar at Ellington Field: "Begin planning how to fly again." ■



99e02843

News Anchor Pam Martin of WSB-TV in Atlanta observes a demonstration of the mechanics of tethered satellites in microgravity.

Ripped from the ROUNDUP

Ripped straight from the pages of old Space News Roundups, here's what happened at JSC on this date:

1 9 7 9

After a year of vibration tests at Marshall, the *Enterprise* was flown piggyback April 10 to KSC where it will be used in "pathfinder" exercises, designed to give Space Program employees experience in handling pre-launch operations and activities.

Chief of Aircraft Operations, Joe Algranti; Kenneth R. Haugen, JSC pilot; and Fitzhugh Fulton, Dryden pilot, flew the NASA 747 that carried the *Enterprise* to Florida.

1 9 8 9

Final preparations are under way at Kennedy Space Center's Launch Complex 39-B on *Atlantis* for the scheduled launch next Friday of mission STS-30 to deploy the Magellan interplanetary spacecraft to map Venus.

Shuttle managers last week recommended holding the launch to the original launch target date of April 28 announced in the October 1987 shuttle manifest. Launch on Friday could occur during a 23-minute window beginning at 1:24 p.m. CDT and ending at 1:47 p.m. The window was increased late last week to protect for a contingency abort across the Atlantic which requires landing no more than 15 minutes after sunset overseas.

1 9 9 4

Endeavour landed Wednesday in California following 11 near-perfect days in orbit on shuttle mission STS-59, a mission that gathered radar images of the Earth's topography, environment, geology and oceanography.

Flight controllers were prepared for *Endeavour* to return to either Florida or California, after having added two extra days to the planned nine-day mission. One day was added to allow additional radar images to be gathered while another day was added when weather at Kennedy Space Center on Tuesday proved unfavorable for a landing there.

The Space Radar Lab-1 instruments aboard *Endeavour* worked flawlessly during their first trip to orbit.

OSHA gets first look at JSC Safety Program

By Mary Peterson

ALOT HAS BEEN WRITTEN and said in recent months about the Voluntary Protection Program and JSC's pursuit of the OSHA VPP Star status, but, as former New York Mayor Ed Koch was prone to ask, a JSC employee may be apt to ask, "How'm I doin'?" That question was posed, at least indirectly, to the Region 6 (Texas, Oklahoma, Arkansas, Louisiana, and New Mexico) OSHA VPP Manager John Stiles during a recent visit to the center.

Indeed, how is JSC doing? To give OSHA some insight into the JSC Safety Program—where it has been, where it is now, and where it is going—SR and QA Deputy Director Rich Dinkel mounted a detailed presentation for Stiles and fellow OSHA representative and Regional Office Director Ray Skinner.

"Our safety program in flight safety has long been world class," said Dinkel, "but we realized we needed to extend it to include our on-the-ground people and operations, which, frankly, got second-billing. This was until 1994, when we got a real wake-up call." Citing the accidental release of an orange cloud of hydrogen tetroxide that could have had potentially disastrous results, Dinkel related how this incident had been the catalyst for subsequently developing the many safety and health initiatives and controls that were far more sophisticated than anything ever before seen at the center. Said Dinkel, "It also was the genesis of a Safety Review Board, and with that, things began to happen."

Personal performance plans were amended to reflect safety; the center director's hotline was established; and line-management-driven safety committees took shape. The Emergency

Operations Center was established not only for site workers, but as a community outreach program as well. Safety and Total Health Day, a full stand-down day for all employees, became an annual event, and the *Safety and Total Health* newsletter was developed to give the program a cohesive identity and to provide a forum in which employees could give voice to their ideas, suggestions, and even complaints, on matters concerning their safety and health. These things and more have been done, all in the interest of making JSC a safer, better place to work.

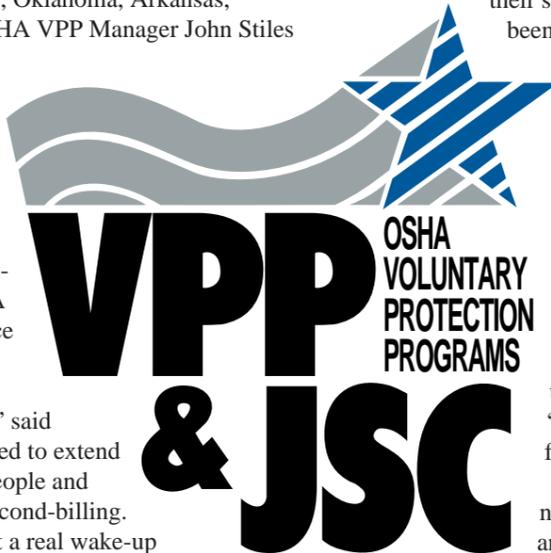
Has it all helped? "You only have to look at the metrics. Not only has it helped, these incentives have worked very well," Dinkel said, pointing to the below-industry-standard for lost workday cases and the measurable savings in money and productivity that have resulted.

An attentive Stiles said, "We're impressed. It's obvious that you have put a lot of hard work into your safety program, and we want to partner with you in this." He said further, "I have no doubt that you'll pass [the evaluation for Star designation]."

Stiles, a former military aerospace engineer, once served at JSC, having worked three-and-a-half years in Mission Control under the leadership of former JSC Director Chris Kraft.

For this reason, he expressed personal pride in the fact that JSC is actively working toward VPP Star status. Recalling those early days with the Gemini and Apollo programs, Stiles reaffirmed how safety has grown in the space industry.

Certainly, space safety has seen dramatic improvement over the years. Now, that high-level of safety awareness has been translated to the ground. OSHA-VPP believes in JSC. With a little extra effort on everyone's part, can the Star be far behind? ■



Employees empowered for safety

Occurrence of commonplace hazard increasing in workplace

By Mary Alice Pruessner

IN JSC'S CLOSE CALL reporting system, the leading type of hazard reported in the last three years has been slips and trips, comprising 19 percent of all reports received. In the first quarter of this year, this hazard increased to 25 percent.

This trend indicates that either more people are aware of safety and, therefore, are reporting slips and trips more frequently, or that this hazard is occurring more often, or both. Whatever the conclusion, the solution is that employees need to increase their awareness of walking surfaces, weather conditions and other factors that contribute to slip hazards, including leather soles on shoes.

Many close calls and injuries at JSC occur when people are walking and not paying close enough attention to walking surfaces. In addition, some employees overload themselves with items to carry and then do not choose the safest route to their destination, a situation that has further complicated this hazard.

Recently, a JSC employee chose to take the stairs to reach a destination. With arms loaded with materials, the employee was unable to hold the handrail while descending the stairs, resulting in a loss of footing and a very serious injury that warranted a trip to the hospital. The injury resulted in a lost workday case.

This issue of slips, trips, and falls is a problem not only for JSC but also for many other organizations. According to a letter published by the Department of

Veteran Affairs in May 1997, this hazard is the "second leading cause of death in the workplace and the third leading cause in disabling injuries."

This letter further notes that "VHA medical and compensation costs associated with slips, trips, and falls totaled more than \$15.3 million in FY 1996."

The possibilities and uses for such a sum of money seem almost endless, especially in the prevailing "faster, better, cheaper" mindset.

To help alleviate these potential problems, many organizations now provide a short course called "Slips, Trips and Falls." Employees will create a win-win situation at JSC if they make a conscious effort to watch out for the safety of themselves and that of others. ■



TICKET WINDOW

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Monday-Friday
Bldg. 3 7 a.m.-4 p.m.
Bldg. 11 9 a.m.-3 p.m.

All tickets are non-refundable. Metro tokens and value cards are available.

For more information, please call x35350.

The following discount tickets are available at the Exchange Stores

General Cinema Theaters	.....	\$5.50
Sony Loew's Theaters	.....	\$5.00
AMC Theaters	.....	\$4.75
Fiesta Texas	.....adult ..\$18.25 ..(child under 48") ..	\$15.50
Astroworld Early Bird (valid through May 31)	.....	\$17.75
Astroworld One-day Admission	.....	\$21.00
Astroworld Season Pass (valid at all Texas Six Flags Theme Parks and Water World)	.....	\$54.75
Water World	.....	\$10.75
Moody Gardens (2 of 6 events)	.....	\$9.75
Sea World	.....adult ..\$27.25 ..child (age 3-11) ..	\$18.25
Schlitterbahn Water Park	.....adult ..\$20.75 ..child (age 3-11) ..	\$17.50
Space Center Houston	.....adult ..\$10.25 ..child (age 4-11) ..	\$6.50
(JSC civil service employees free.)		
Splash Town Water Park	.....adult ..\$14.50 (child 48" and under) ..	\$11.50



Secretaries

Earn Bockting Excellence Awards

Yolanda Bejarano, Pamela Baker, Laura Goerner and Karen Black are among recent recipients of the Marilyn J. Bockting Secretarial Excellence Award in recognition of their outstanding efforts. This award was established to recognize and honor secretaries who have made exceptional contributions to the effective operation of the Johnson Space Center through professional competence and personal dedication.

Bejarano of the Space Shuttle Management Integration Office



Yolanda Bejarano

S98-17340

was recognized for her sustained exceptional performance and significant contributions to the Management Integration Office and the Space Shuttle Program. In addition to her excellent office administration and secretarial skills, she has volunteered to be a pathfinder in the use of new software tools and hardware prototype systems. Through these efforts she provides valuable insight into the use of new tools for JSC secretaries and other users.

Bejarano's willingness to undertake tasks and to meet her commitments with products and services of the highest quality on schedule was demonstrated during the ISO 9001 certification activities. She ensured that she was educated on the requirements and that they were implemented in a timely manner. Her attitude and willingness to help have earned her respect and appreciation from her coworkers and supervisors.

Baker of the Information Systems Directorate was recognized for her exceptional job of handling the traditional secretarial



Pamela Baker

S98-20241

responsibilities for a diverse and dispersed group of employees. She serves as secretary for ISD's contractor officer's technical representatives for the information systems and information, imagery, media, and public affairs support services contracts, and ISD's customer service and configuration management groups.

In this time of downsizing, Baker has been instrumental in helping to ensure that ISD continues to deliver excellent service to the center. She has stepped in and picked up the ball on new and more challenging duties. This effort has required outstanding skills in communication and computer desktop applications

beyond those of a division secretary. She has also been instrumental in the smooth transition and continuous improvements to the IMPASS contract.

Goerner of the Engineering Directorate was recognized for her high level of motivation and skillful execution of all aspects of her job. She has learned the intricacies of the directorate, which is very large and diverse, and has taken on the role of lead secretary in an exceptional manner. She has developed



Laura Goerner

S99-04317

an excellent rapport with the managers within the directorate and their secretaries.

Goerner is extremely reliable and is always able to provide support whenever it is needed. She has worked long hours and striven to learn everything there is to know about the job and the organization to ensure the continued smooth running of the office.

Black of the Human Resources Office was recognized for her exceptional job of handling the traditional secretarial responsibilities for a diverse and dispersed group of employees. As secretary for ISD's contractor officer's technical representatives, she has made significant contributions to the Human Resources Management Branch.

In addition to her excellent secretarial skills, her greatest asset is her talent for working with people. She has a wonderful customer focus, a very important requirement in her organization and in the work she does as the center's Leave Transfer Program



Karen Black

S99-0431

coordinator. From the day she joined the branch, she has worked in a dual role of as branch secretary and as office manager, and she has been successful serving in both of these capacities. With her excellent organization skills, she has made process improvement changes that have resulted in significant streamlining. ■

Faces in the crowd

Is VPP being implemented well in your organization?



George Markham
Programmer
United Space Alliance

"Definitely. VPP is an outstanding program that we have here to show that we are a safety oriented type facility, and we are proud that we can be associated with it."



Pat Simpson
Operations Analyst
Barrios

"I appreciate the great effort, time and various processes used in getting the VPP information to us."



Alex Sanders
Engineer
NASA

"Yes it is. We have a lot of literature that comes through that keeps us updated with the latest VPP information, and we have a very good representative who provides us with information as well."



Susie Cour-Palais
Program Analyst
NASA

"Yes it is. We have fun with it. VPP has been worked into games that have had rewards given to the winner of the games."



David Chiquelin
Senior Engineer
USA

"The most striking result to me of implementing VPP has been the increase in safety communications."

DATES & DATA**May 3**

NSBE meets: The National Society of Black Engineers will meet at 6:30 p.m. May 3 at Texas Southern University, School of Technology, Rm. 316. For details, call Kimberly Topps at (281) 280-2917.

May 5

Astronomy seminar: The JSC Astronomy Seminar will meet at noon May 5 and 12 in Bldg. 31, Rm. 248A. For more information, call Al Jackson at x35037.

Spaceland Toastmasters meet: The Spaceland Toastmasters will meet at 7 a.m. May 5 and 12 at the House of Prayer Lutheran Church. For additional information, call George Salazar at x30162.

Communicators meet: The Clear Lake Communicators, a Toastmasters club, will meet at 11:30 a.m. May 5 and 12 at Lockheed Martin, 555 Forge River Rd. For details, call Allen Prescott at 282-3281 or Mark Caronna at 282-4306.

Spaceteam Toastmasters meet: The Spaceteam Toastmasters will meet at 11:30 a.m. May 5 and 12 at United Space Alliance, 600 Gemini. For details, call Patricia Blackwell at (281) 282-4302 or Brian Collins at x35190.

May 6

Warning System Test: The site-wide Employee Warning System will perform its monthly audio test at noon May 6. For more information, call Bon Gaffney at x34249.

May 11

NCMA meets: The National Contract Management Association will hold its education symposium at the University of Houston - Clear Lake May 11. For additional information, contact Marianne Ruiz at x38528.

May 12

IAAP meets: The Clear Lake/NASA Chapter of the International Association of Administrative Professionals (formerly Professional Secretaries International) will meet at 5:30 p.m. May 12 at Bay Oaks Country Club. Cost is \$16. For details and reservations, call Tami Barbour at (281) 488-0055, x238.

May 13

MAES meets: The Society of Mexican-American Engineers and Scientists will meet at 11:30 a.m. May 13 in Bldg. 16, Rm. 111. For details, call George Salazar at x30162.

Airplane club meets: The Radio Control Airplane Club will meet at 7 p.m. May 13 at the Clear Lake Park building. For additional information, call Bill Langdoc at x35970.

May 14

Astronomers meet: The JSC Astronomical Society will meet at 7:30 p.m. May 14 at the Center for Advanced Space Studies, 3600 Bay Area Blvd. For more information, call Chuck Shaw at x35416.

May 19

Scuba club meets: The Lunarfans will meet at 7:30 p.m. May 19. For details, call Mike Manering at x32618.

May 20

Directors meet: The Space Family Education board of directors will meet at 11:30 a.m. May 20 in Bldg. 45, Rm. 712D. For more information on this open meeting, call Gretchen Thomas at x37664.

May 24

Alzheimer's support group meets: The Clear lake Alzheimer's Caregiver Support Group will meet from 7:30 p.m. to 9 p.m. May 24 in the first floor conference room in St. John Hospital, West Building, in Nassau Bay. For more information, call Nancy Malley (281) 480-8917 or John Gouveia (281) 280-8517.

May 27

National Space Society: The National Space Society will hold the 18th annual International Space Development Conference May 27-31, 1999, at the Hobby Airport Radisson Hotel, 9100 Gulf Freeway. Call 1-800-333-3333 by May 12 for reservations at the \$75 rate.

Radio Club meets: The JSC Amateur Radio Club will meet at 6:30 p.m. May 27 at the Piccadilly, 2465 Bay Area Blvd. For details, call Larry Dietrich at x39198.

May 28

Apollo 10 anniversary: The NASA Alumni League will sponsor a celebration of the 30th anniversary of Apollo 10 at the Radisson-Hobby. See the National Space Society's International Space Development Conference registration form at <http://www.nss.org/isdc>. JSC employees may register for the ISDC at the \$65 rate prior to May 1 and be reimbursed by JSC. Those interested in attending may also contact Norm Chaffee at (281) 483-3777 or Chet Vaughan at (281) 336-4140. For additional information about the ISDC, contact Marianne Dyson at (281) 486-4747. For information about the Apollo 10 celebration, contact Don Brown at (281) 488-0754.

NASA BRIEFS**STORMS ROUSE URANUS FROM HIBERNATION**

If springtime on Earth were anything like it will be on Uranus, we would be experiencing waves of massive storms, each one covering the country from Kansas to New York, with temperatures of 300 degrees below zero.

A dramatic new time-lapse movie by NASA's Hubble Space Telescope shows for the first time seasonal changes on the planet. Once considered one of the blander-looking planets, Uranus is now revealed as a dynamic world with the brightest clouds in the outer Solar System and a fragile ring system that wobbles like an unbalanced wagon wheel. The clouds are probably made of crystals of methane, which condense as warm bubbles of gas well up from deep in the atmosphere of Uranus.

The movie, created by Hubble researcher Erich Karkoschka of the University of Arizona, clearly shows for the first time the wobble in the ring system, which is made of billions of tiny pebbles. This wobble may be caused by Uranus' shape, which is like a slightly flattened globe, along with the gravitational tug from its many moons.

EXOTIC TECHNOLOGIES FINISH ROAD TEST ON COSMIC HIGHWAY

NASA's Deep Space 1 mission has successfully demonstrated most of its exotic technologies in space — including an ion engine that is expected to be ten times more efficient than conventional liquid or solid rocket engines — proving they are ready for use in science missions of the 21st century.

Of the 12 advanced technologies on board the spacecraft, seven have completed testing, including the ion propulsion system, solar array and new technologies in communications, microelectronics and spacecraft structures.

"We've taken these technologies around the test track, and now they're ready for the production line," said Dr. Marc Rayman, deputy mission manager and chief mission engineer for Deep Space 1 at the Jet Propulsion Laboratory.

DEPLOYED ANTENNA SENDING NEW MARS IMAGES

A steady stream of new data from Mars, including high-resolution images, has begun arriving at Earth receiving stations following deployment of the Mars Global Surveyor's high-power communications antenna.

"Having a deployed, steerable high-gain antenna is like switching from a garden hose to a fire hose in terms of data return from the spacecraft," said Joseph Beerer, flight operations manager for Mars Global Surveyor at the Jet Propulsion Laboratory.

The antenna was deployed March 28. It had been stowed since launch in November 1996 to reduce its chances of being contaminated by exhaust from the spacecraft's main engine, which was fired periodically throughout the mission. The spacecraft entered orbit around Mars in September 1997 and used a technique called aerobraking to gradually lower the spacecraft's altitude to the desired orbit for mapping. The mapping mission began March 9; full-scale mapping began April 4.

GILRUTH CENTER NEWS

Hours: The Gilruth Center is open from 6:30 a.m.-10 p.m. Monday-Thursday, 6:30 a.m.-9 p.m. Friday, and 9 a.m.-2 p.m. Saturday. Contact the Gilruth Center at (281) 483-3345.

Sign up policy: All classes and athletic activities are on a first-come, first-served basis. Sign up in person at the Gilruth Center and show a yellow Gilruth or weight room badge. Classes tend to fill up two weeks in advance. Payment must be made in full, in exact change or by check, at the time of registration. No registration will be taken by telephone. For more information, call x33345.

Gilruth badges: Required for use of the Gilruth Center. Employees, spouses, eligible dependents, NASA retirees and spouses may apply for photo identification badges from 7:30 a.m.-9 p.m. Monday-Friday and 9 a.m.-2 p.m. Saturdays. Cost is \$10. Dependents must be between 16 and 23 years old.

Nutrition intervention program: Six-week program includes lectures, a private consultation with the dietitian and blood analysis to chart your progress. For additional information, call Tammie Shaw at x32980.

Weight safety: Required course for employees wishing to use the Gilruth weight room. Pre-registration is required. Cost is \$5. Annual weight room use fee is \$90. The cost for additional family members is \$50.

Exercise: Low-impact class meets from 5:15-6:15 p.m. Mondays and Wednesdays. Cost is \$24 for eight weeks.

Defensive driving: One-day course is offered once a month at the Gilruth Center. Pre-registration required. Cost is \$25. Call for next available class.

Stamp club: Meets every second and fourth Monday at 7 p.m. in Rm. 216.

Step/bench aerobics: Low-impact cardiovascular workout. Classes meet from 5:15-6:15 p.m. Tuesdays and Thursdays. Cost is \$32 for eight weeks. Call Kristen Taragzewski, instructor, at x36891 for more information.

Yoga: Stretching class of low-impact exercises designed for people of all ages and abilities in a Westernized format. Meets Thursdays 5-6 p.m. Cost is \$32 for eight weeks. Call Darrell Matula, instructor, at x38520 for more information.

Ballroom dancing: Classes meet from 7-8:15 p.m. Thursdays for beginner-advanced classes and from 8:15-9:30 p.m. for beginner-intermediate and intermediate students. Cost is \$60 per couple.

Country and western dancing: Beginner class meets 7-8:30 p.m. Monday. Advanced class (must know basic steps to all dances) meets 8:30-10 p.m. Monday. Cost is \$20 per couple.

Fitness program: Health-related fitness program includes a medical screening examination and a 12-week individually prescribed exercise program. For more information call Larry Wier at x30301.

<http://www4.jsc.nasa.gov/ah/exceaa/Gilruth/Gilruth.htm>



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